



SERVIR

Brief Perspective & Future Directions

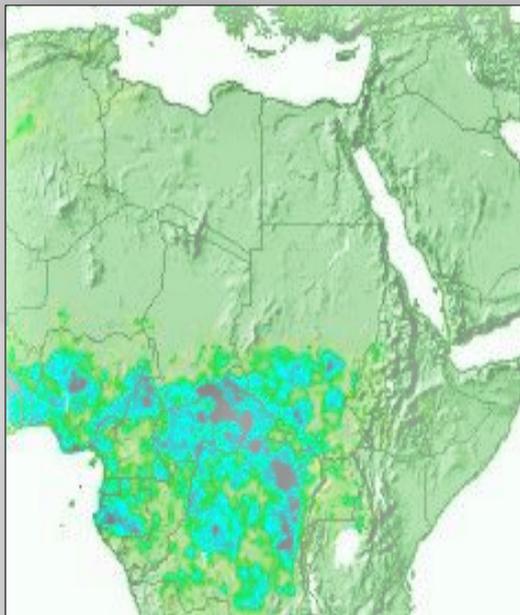
**Public Health Program Review
San Antonio, Sept 29, 2010**

**Ashutosh Limaye
NASA/Marshall Space Flight Center**

SERVIR



Enabling the use of earth observations and models for timely decision making to benefit society



Flood Forecasting in Africa



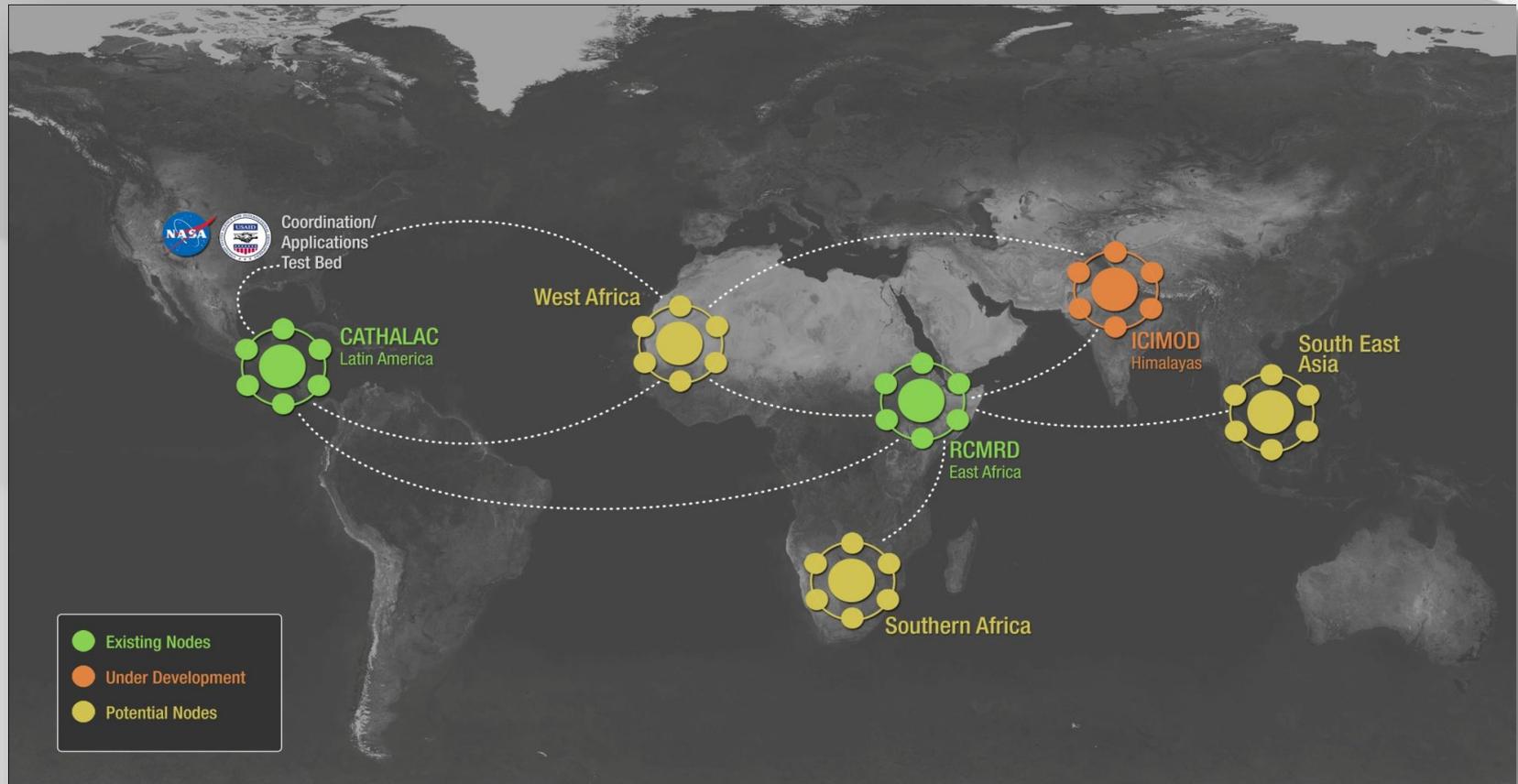
Training and Capacity Building



Mapping Fires in Guatemala Mexico

- Data and Models
- Online Maps
- Visualizations
- Decision Support
- Training
- Partnerships

SERVIR Network



SERVIR @ CATHALAC

City of Knowledge, Panama

Dedicated on February 3, 2005



SERVIR-Africa @ RCMRD

Nairobi, Kenya



Dedicated on
November 21, 2008



Daniel
Database Mgt
Specialist



Erick
Project Lead
at
RCMRD



Catherine
Remote
Sensing
Analyst

Tesfaye
Senior Scientist



Lawrence
RCMRD
Database
Manager



Wafula
IT System
Administrator



John
Web services
Specialist

SERVIR-Himalaya @ ICIMOD

Kathmandu, Nepal



Coming...
October 2010



SERVIR Applications

Applications are the mechanisms by which remotely sensed and in-situ observations are translated into useful information for societal benefit

- **Applied Science Program**

agriculture, air quality, climate, natural disasters, ecological forecasting, public health, water resources, and weather

- **GEO**

agriculture, biodiversity, climate, disaster, ecosystems, and human health

- **USAID**

Climate change adaptation, carbon tracking and GEO focus areas

- **Regional Needs Assessment**



SERVIR Air Quality Modeling

Mesoscale atmospheric model WRF coupled to EPA's CMAQ Air Quality model generates operational model runs and model forecasts

SERVIR Español

INICIO NOTICIAS SERVICIO BLOG PORTAL DE DATOS CALIDAD DEL AIRE VISUALIZACIONES 3D DOCUMENTOS GALERIA DE IMAGENES ACERCA DE SERVICIO

Air Quality in Mesoamerica

Logos: NASA, USAID, CCAD

Ultimas Evaluaciones

- Depresión Tropical 16
- Interpretación de imágenes de inundaciones en Haití
- Huracán Ike
- Huracán Hanna
- Huracán Gustav

Comunidad

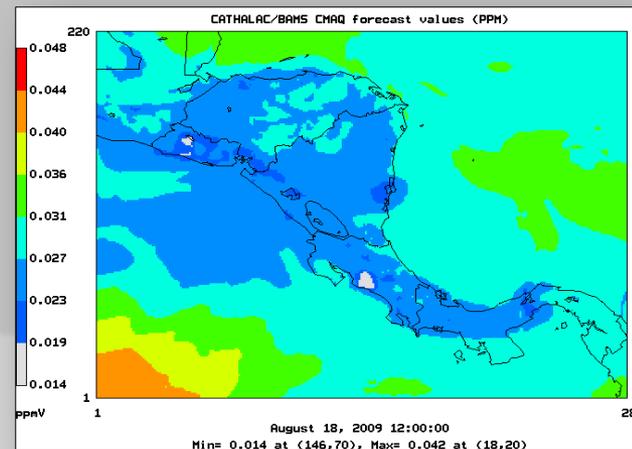
Usuario:

Clave:

Recordarme

[¿Recuperar clave?](#)

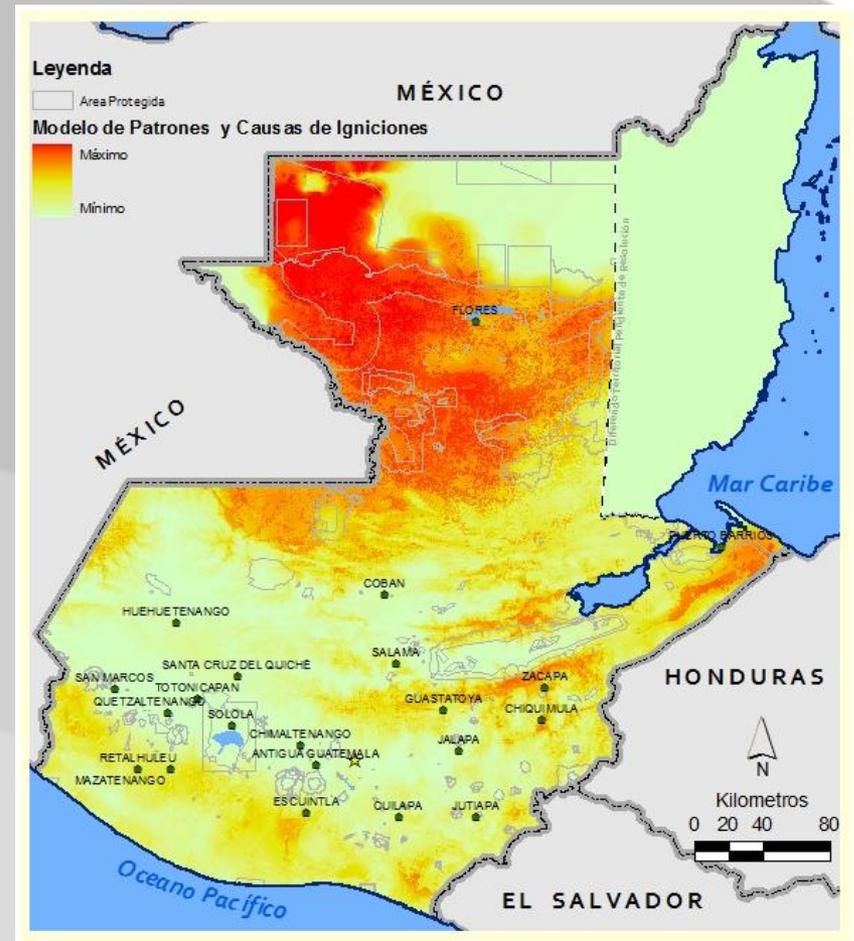
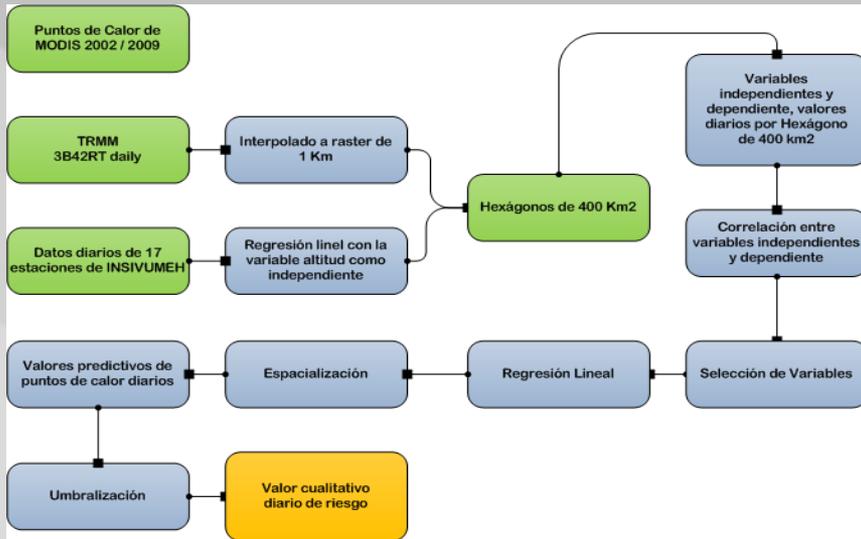
[¿Quiere registrarse? Regístrate aquí](#)



Forecasting Air Quality
in Central America

SERVIR Fire Forecasting

Fire forecasting uses MODIS Rapid Response System, a collaborative effort between GSFC and University of Maryland



SERVIR Hydrologic Modeling

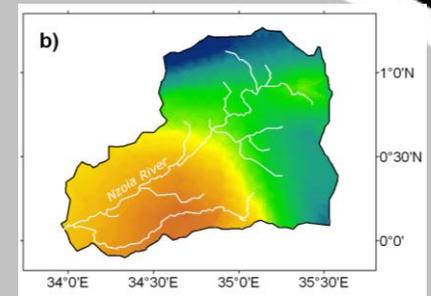
Spatially distributed hydrologic model CREST is developed by University of Oklahoma

Based on Variable Infiltration Capacity (VIC)

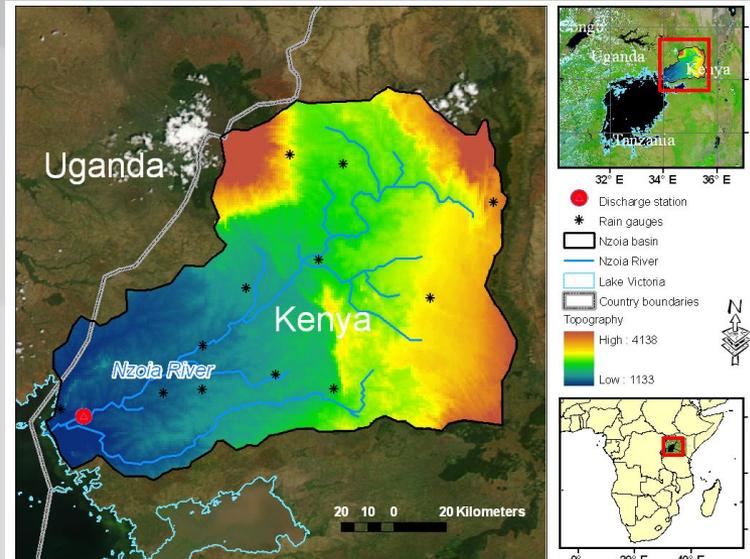
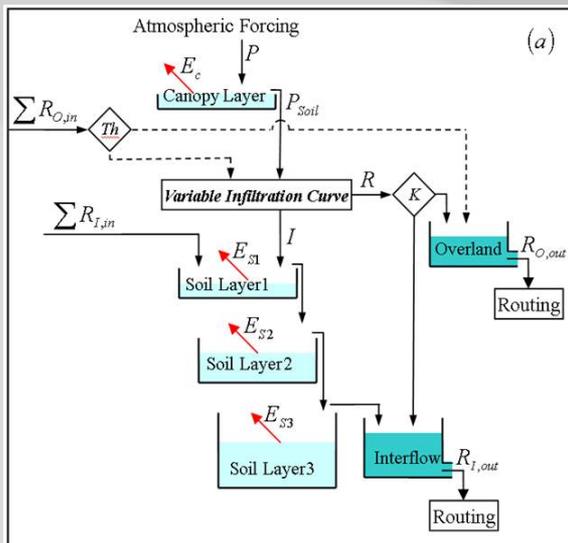
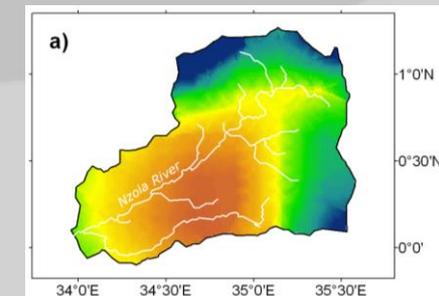
Spatial resolution ~1km

Uses near real-time 3B42 TRMM rainfall estimates to produce soil moisture, evapotranspiration and streamflow

Nzoia River in the Lake Victoria Basin

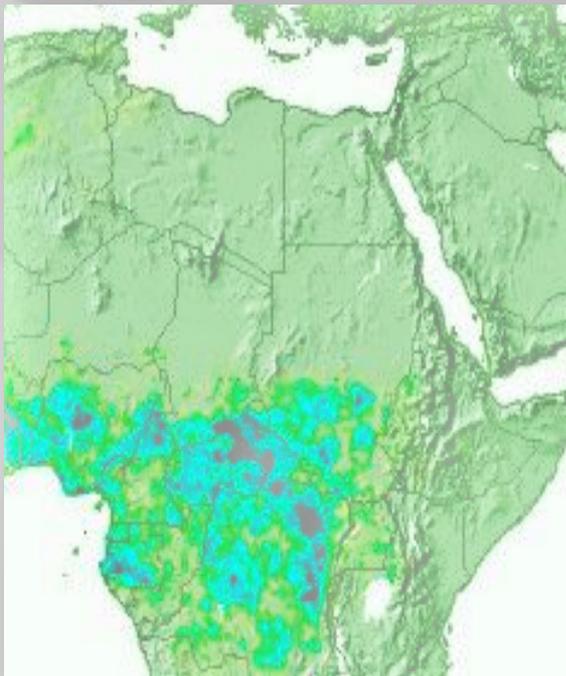


Modeled Evapotranspiration

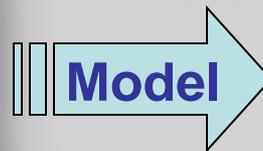


Mapping Flood Potential in Africa

- Using a regional version of the hydrologic model with near-real time precipitation from the 3B42 TRMM rainfall to derive flood potential over a much larger area
- Provides an estimate of expected depth of flood inundation at a 0.25 degree resolution
- Precipitation forecast data can be used with the model to provide longer lead time forecasts



TRMM 3B42 Precipitation



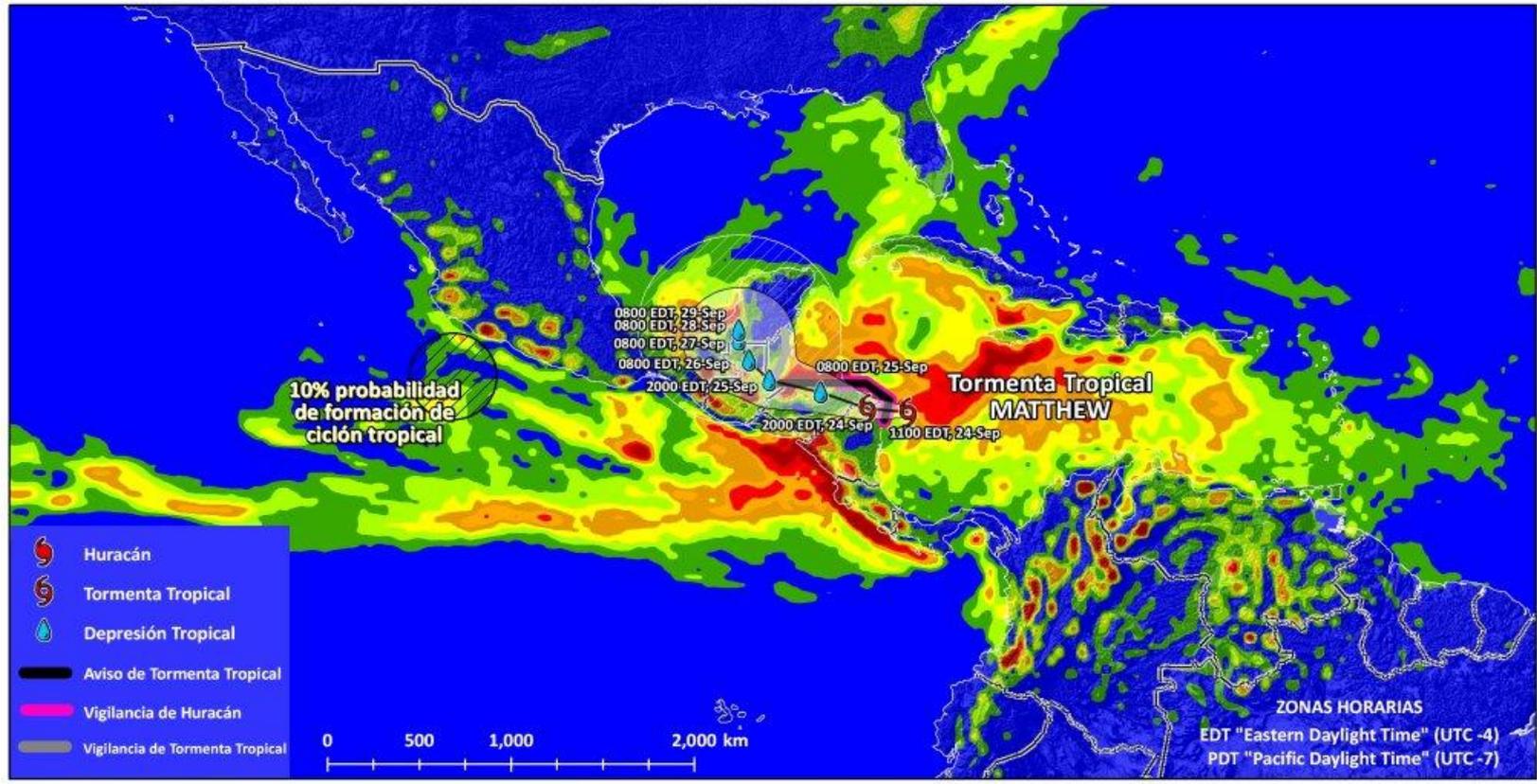
Flood Potential

Extreme Events

Rainfall Forecasts for Mesoamerica

Pronóstico de precipitación de 7 días en Mesoamérica y el Caribe para el periodo del 24 de septiembre al 30 de septiembre de 2010

Generado por CATHALAC
24 Septiembre 2010, 1200 (UTC -5)



- Huracán
- Tormenta Tropical
- Depresión Tropical
- Aviso de Tormenta Tropical
- Vigilancia de Huracán
- Vigilancia de Tormenta Tropical



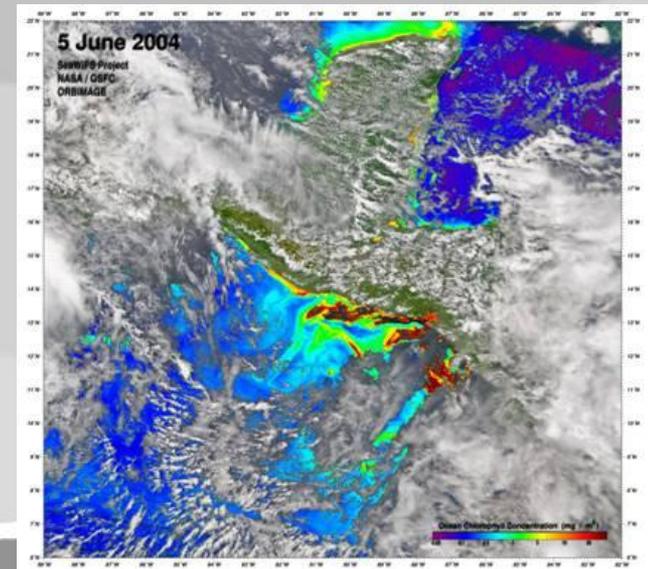
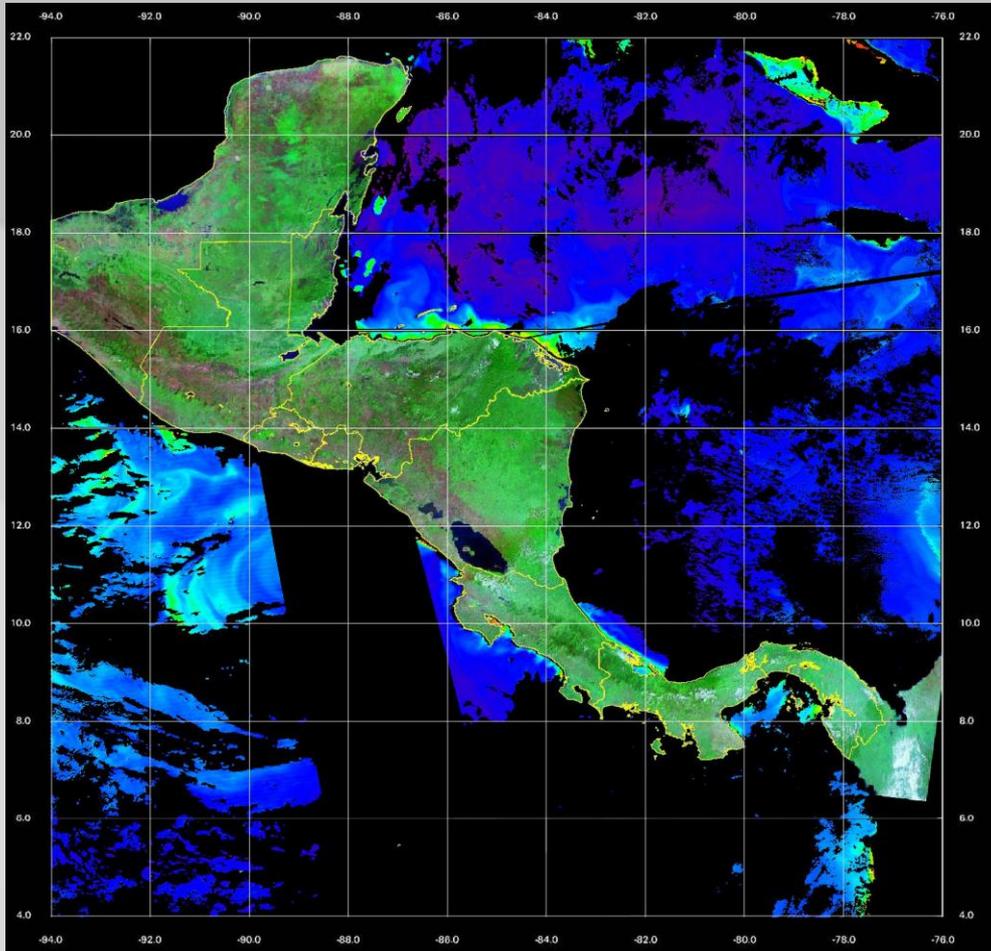
Fuentes de información: NOAA (GFS, NHC); ESRI, NASA

www.servir.net

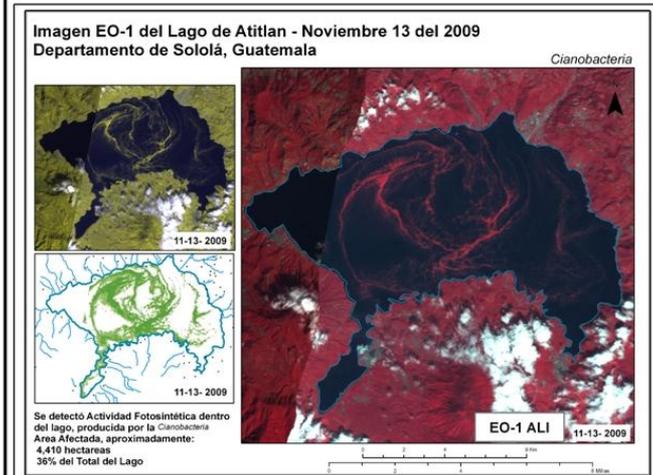
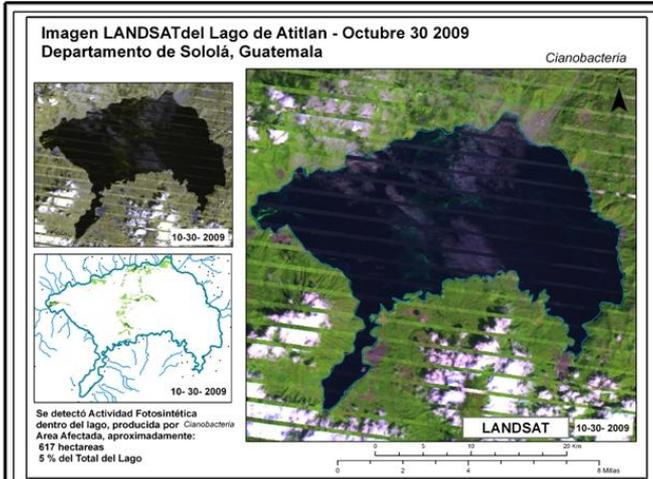


Harmful Algal Blooms

Real time monitoring of Harmful Algal Blooms (HAB) using remotely sensed data products



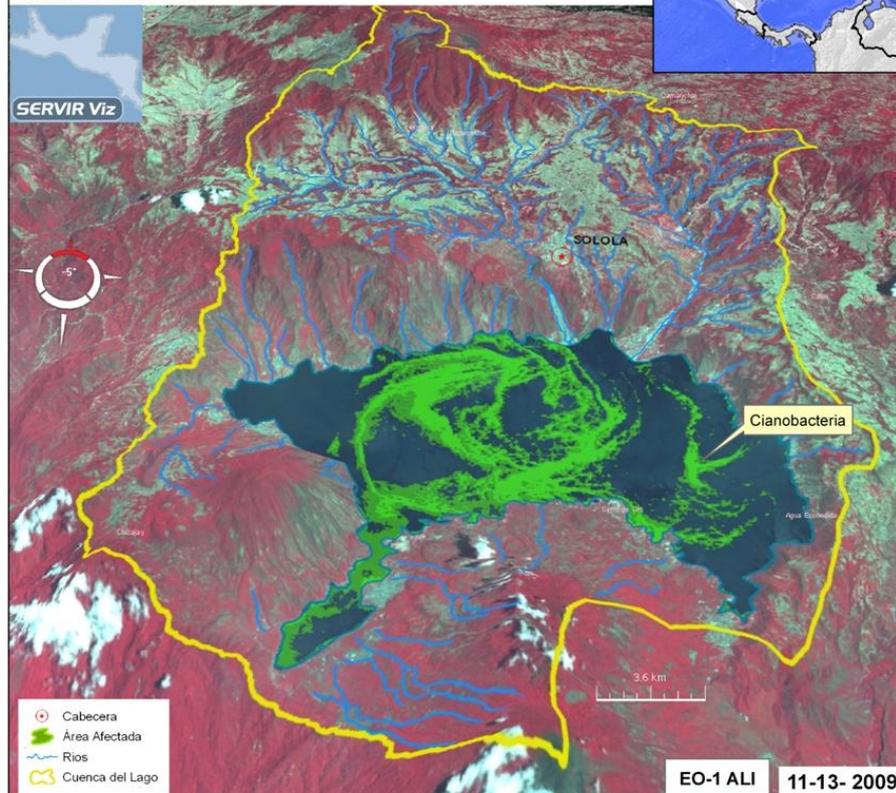
Lake Water Quality Cyanobacteria Growth



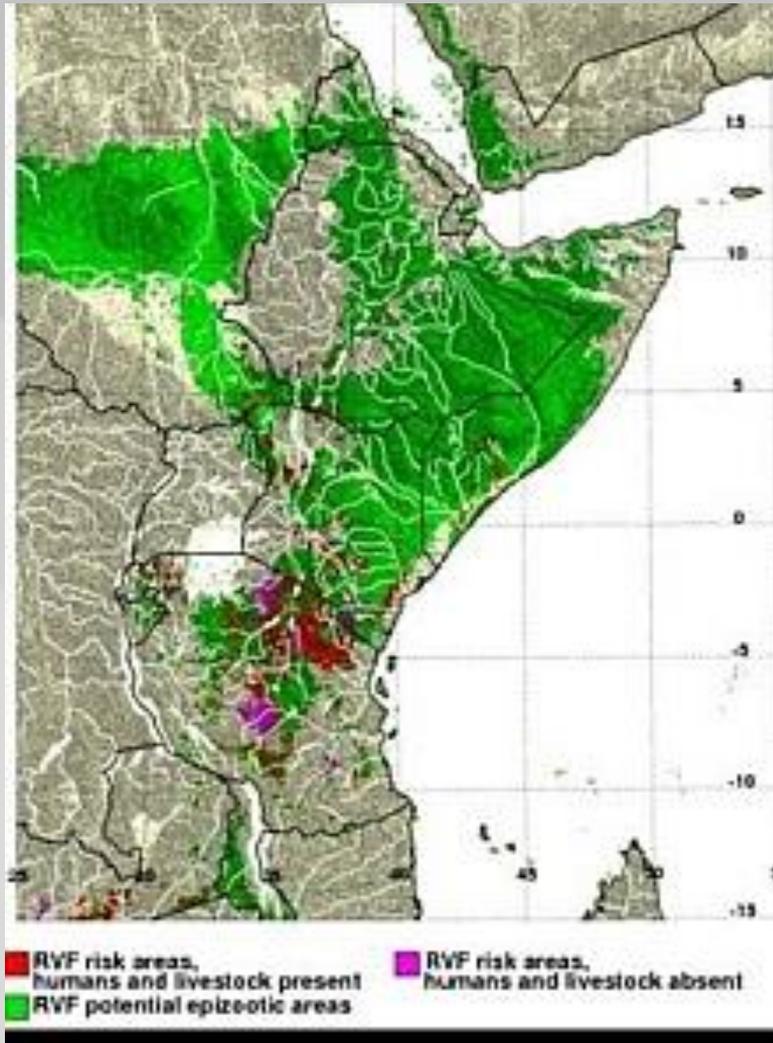
Lago de Atilán, Departamento de Sololá, Guatemala Área Afectada por *Cianobacteria*

Sistema Hídrico de la
Cuenca Endorreica del Lago de Atilán

Visualización en SERVIR-VIZ



Rift Valley Fever in Africa



Rift Valley Fever Risk Mapping using AVHRR data and flooding potential maps

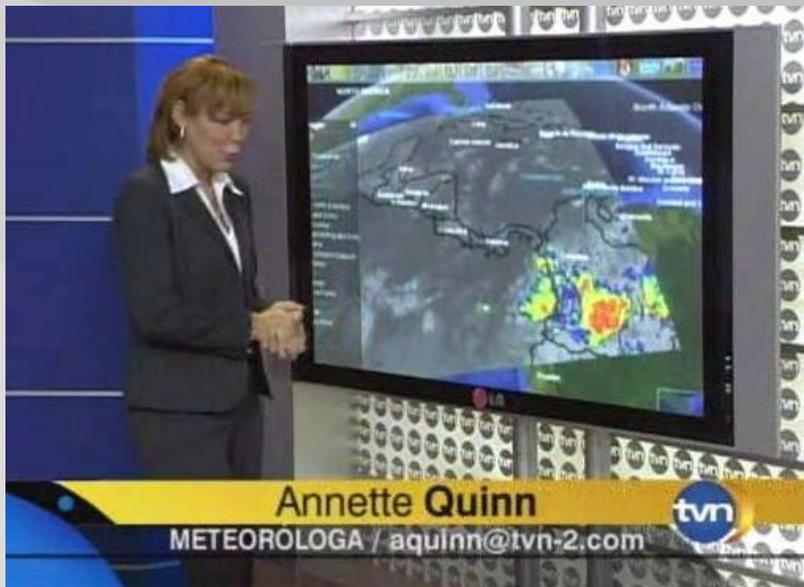
MyCOE-SERVIR Initiative

- Building capacity to protect biodiversity using GIS, RS, and geospatial analytical techniques.
- Strengthening collaboration amongst universities, government environmental authorities, and NGOs.
- Students & mentors competitively selected; both receive modest stipends to conduct 6-month long projects and travel support .



SERVIR Users

Decision makers, media, educators, students, private industry, community groups.





SERVIR Challenges

Each SERVIR node has unique challenges

- Natural disasters are more prominent in Mesoamerica
- Droughts and water shortages are critical in Africa
- Mountain challenges are unique to Himalayas

However, there are some key similarities across nodes

- Climate change
- Urbanization and land cover change
- Impacts on public health, water resources, agriculture



Historical Analysis

- Typically, we rely on past observations to “benchmark” the analysis of remotely sensed data and products
- However, recorded observations are hard to come by in developing countries
- Hindcasting of key products provide a historic perspective, which can be inferred on such data sparse regions.
- For example, NASA GSFC’s Global Land Data Assimilation System (GLDAS), based on Land Information System (LIS) employs historic re-analysis datasets and are available for over 30-years.



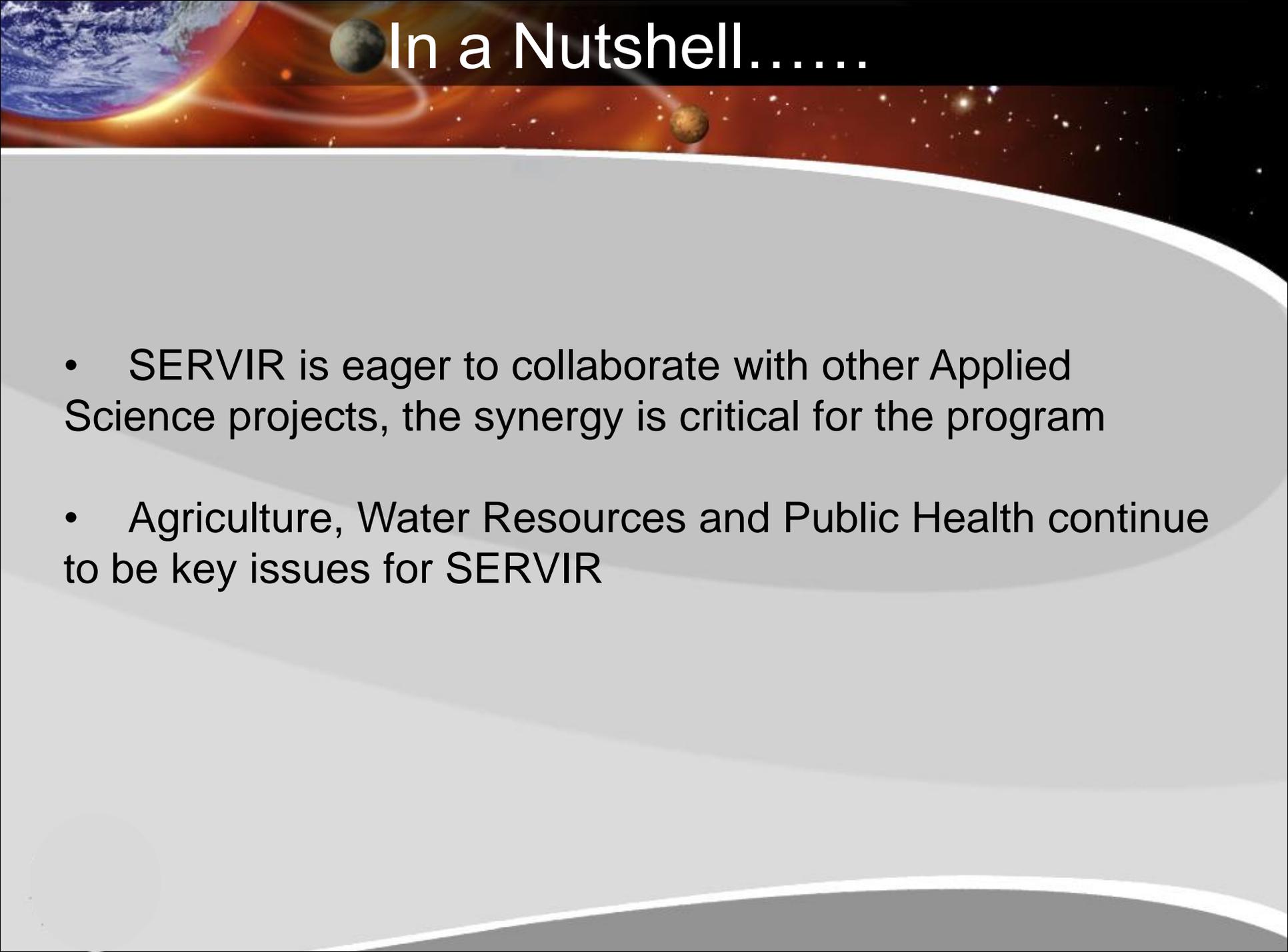
Near Real-time Analysis

- These long term historic datasets give much needed perspective for the analysis of real time products.
- Anticipate expansion of SERVIR application portfolio in public health, agriculture and water resources
- Analysis grounded in historic perspective, and using near-real time observations and data products enables improved decision making



Climate Change and Impacts

- Analysis based on long term reanalysis datasets can also give us a perspective for the analysis of climate change scenarios.
- Changes in probabilities of atmospheric variables can be implemented in an ensemble sense as perturbations on the reanalysis datasets.
- Climate change adaptation is a very important topic for USAID. Providing policy relevant information to nodes and their partners will be critical.

The background of the slide is a vibrant space scene. At the top left, a portion of the Earth is visible, showing blue oceans and white clouds. To its right, the Moon is shown in a dark, cratered phase. Further right, a bright orange and red planet, likely Mars, is partially visible. The rest of the background is a deep black space filled with numerous white stars of varying sizes and colors, including a prominent yellow star. The overall aesthetic is that of a cosmic or astronomical theme.

In a Nutshell.....

- SERVIR is eager to collaborate with other Applied Science projects, the synergy is critical for the program
- Agriculture, Water Resources and Public Health continue to be key issues for SERVIR



Ashutosh Limaye

256-961-7903

Ashutosh.Limaye@nasa.gov

